# An evaluation of the management of patients with sore throats by practice nurses and GPs

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*SUMMARY*

***Background.*** *Practice nurses are increasingly involved in the management of minor illnesses in primary care. However, there has been little work published that evaluates the quality of the service they offer to patients. In our practice (semi-rural, 14 000 patients) a nursing triage system for minor illnesses has been established since 1992.*

***Aim.*** *To compare the quality of management of sore throats by practice nurses and general practitioners (GPs) in a routine nursing triage system.*

***Method.*** *An observational study assessing all patients over the age of two years presenting over a six-month period (February–August 1997) to either the practice nurse or GP with a sore throat as the chief presenting complaint. Patients were followed up at five to seven days by a researcher and recovery rates, analgesic requirements, reconsultation rates, and satisfaction rates were recorded. Patients who were still symptomatic at five to seven days were followed up again at 28 days and outcomes recorded.*

***Results.*** *A total of 44% of patients consulted the practice nurse and 56% consulted the GP. Severity of presenting illness was similar in the two groups. The number of patients whose sore throats had settled, reconsultation rates, antibiotic prescription, and dissatisfaction rates were the same for both groups. However, the patients consulting the nurse had a more favourable outcome on indices such as patients' perception of being back to normal health (64% versus 53%) and median number of days for the sore throat to settle (four versus five). Nurses tended to see younger patients (mean age = 22.5 years versus 28.3 years) and more patients seeing the practice nurse recalled receiving advice about home remedies (76% versus 54%).*

***Conclusion.*** *Practice nurses can establish a safe and effective service for treatment of sore throats in a time-restricted triage system.*

*Keywords: practice nurses; sore throats; triage.*

## Introduction

THE number of practice nurses has more than tripled over the past 10 years.[1] A total of 84% of nurses are involved in giving advice on minor illnesses.[2] The Community Nursing Review of 1986 states that 'Key tasks of nurses would be to interview patients, diagnose and treat specific diseases in accordance with agreed medical protocols and refer onto general practitioners [GPs], patients who have problems outside the protocols'.[3]

It was in this background that we established a nursing triage system for minor illnesses. This service was established as it was felt that this would be a more cost-effective use of resources in primary care. The aim of this project was to compare management decisions and patient outcomes between patients managed through the nursing triage system and those who received conventional GP care, using sore throats as the index symptom.

There has been much published work on the expanding role of the practice nurse.[4,5] Some studies[6,7] have described establishing a nurse-led minor illness service in primary care. However, patient outcomes were not analysed. Studies that have analysed the patient outcomes of nurse management have tended to describe nurse-led chronic disease management clinics,[8] nurses with extended training in specific areas[9] or nurse practitioners.[10] The length of the nurse appointments in these studies is also often prolonged at 20 to 30 minutes.[5]

Our study includes practice nurses who have received in-house training and supervision in managing minor illnesses. This training incorporated tutorials, clinical meetings, and the practice nurse 'sitting-in' with GPs in their emergency surgeries.

The nursing triage surgery compares with the GP emergency surgery and both run on five-minute appointments (compared with 15 minutes and 10 minutes for routine consultations respectively). This study therefore evaluates a practice nurse-led minor illness service which may be realistically incorporated into routine primary care.

## Method

Management of minor illnesses by practice nurses has been established in our practice (14 000 patients, semi-rural) since 1992. Sore throats were managed according to an agreed protocol, based on common practice at that time (Figure 1). This protocol was not an evidence-based protocol but has some research evidence to support it.[11] However, Del Mar's recent systematic review[12] has suggested limited benefit of antibiotics in uncomplicated sore throats.

All patients over the age of two years presenting to the doctor or practice nurse in normal working hours with sore throat were included in the study, which ran for six months from February to July 1997. Only patients (or parents of patients, in the case of young children) who clearly stated that their main problem was a sore throat were entered in the study, which included patients with pharyngitis and typical tonsillitis. Patients who were found to have a sore throat or tonsillitis as an incidental finding were not included. Patients signed a consent form prior to entry in the study. History and examination were recorded for all patients. Throat swabs were performed on all patients. All medical participants were instructed in swab-taking procedure. Swabs were taken from the tonsillar bed and/or posterior pharynx, avoiding the tongue and uvula.

The swabs were transported in Amies medium with charcoal within 24 hours to the microbiology laboratory at St. Mary's Hospital, Portsmouth. The swabs were then cultured in blood agar and incubated at 35ÞC to 37ÞC for up to 24 hours. The cultures were read after 16 hours. *Haemolytic streptococcus* was identified by Lancefield Group.

The groups of patients consulting the practice nurse or GP were not randomly selected. There are logistical problems in achieving randomisation when dealing with specific acute condi-

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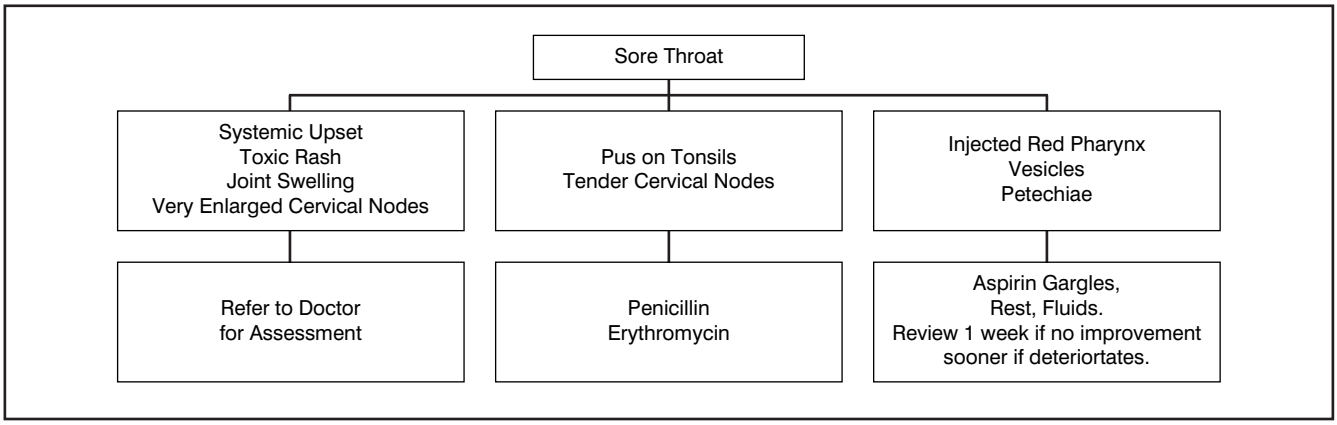


**Figure 1.** Common practice protocol for sore throat.

tions, such as a sore throat, as it would mean patients seeing a practitioner and having a provisional diagnosis made prior to randomisation and this would be difficult to achieve in routine surgery. Therefore, the two groups were achieved according to patient choice and appointment availability.

At five to seven days, one unblinded researcher initiated contact with each patient by telephone. Data were elucidated concerning any continuing sore throat symptom. Self-reported analgesia usage was recorded. Reconsultation rates were noted. The same researcher contacted those patients with unresolved sore throat again at one month to assess their recovery and note any serious sequelae of their illness.

Data were analysed as a case-controlled study. For categorial outcomes, the two groups were compared by means of a chi-squared test. For quantitative outcomes a two-sample *t*-test was used to compare mean values. A non-parametric alternative (Wilcoxon–Mann–Whitney sum of rank tests) was used for data that could not be assumed to be normally distributed. Ethics committee approval was sought and granted.

## Results

A total of 435 patients presented with sore throats as the primary presenting symptom between February and August 1997. This is equivalent to 62 consultations/1000 patients/year. Forty-four per cent ($n$ = 188) of patients consulted with the practice nurse and 56% ($n$ = 247) with the GP. For those patients for whom it was specified ($n$ = 265), 9% ($n$ = 23) requested to consult with the doctor, 48% ($n$ = 126) requested to see the nurse, and 44% ($n$ = 116) were directed to see either the doctor or nurse by the receptionist, according to appointment availability.

Table 1 compares the characteristics of the patient groups who consulted with the doctor or practice nurse. There is no statistical difference in the sex distribution in the two groups. However, the mean age of the two groups was statistically different, with younger patients tending to see the practice nurse. To assess whether the two groups varied in their degree of illness we used Dagnelie's[11] criterion. Dagnelie stated that patients with a history of fever, absence of cough, tonsillary exudates, and anterior cervical lymphadenopathy were more likely to harbour $\beta$-haemolytic streptococci. In our study, patients who consulted with the doctor or nurse were similar in degree of feverishness (history) and cervical lymphadenopathy, while the patients consulting the nurse were more likely to have an absence of cough and those consulting with the doctor were more likely to have tonsillary exudates. Other criteria to establish severity of illness between the two groups, such as vomiting, were the same in both groups. Significantly more patients who consulted with the nurse had throat swabs that grew group A β haemolytic streptococci.

Twenty-seven per cent ($n$ = 51) of the patients initially consulting the nurse were subsequently referred to the GP. Table 2 compares the characteristics of the patients treated entirely by the nurse with those who the nurse referred to the doctor. This shows that patients referred to the doctor tended to be more positive for the key features listed by Dagnelie,[11] but the only feature that was statistically significant in the group referred to the doctor was a history of fever.

Outcome measures from the two groups were then compared. Ninety per cent ($n$ = 392) of patients were followed up at five to seven days by telephone by one unblinded researcher. The results are recorded in Table 3. The results were analysed on an intention to treat basis. All of the patients who initially saw the nurse were analysed in the nurse outcome data, whether they were subsequently referred to the doctor or not. This was because the initial patient management intention was nurse treatment and because appropriate referral of patients to the GP is one of the nurses' treatment options. Patients who no longer had a sore throat at follow up were recorded as 'sore throat settled'. Those patients who no longer felt any degree of malaise or unwellness and whose sore throat had settled were recorded as 'back to normal health'.

There were significant differences in favour of the practice nurses, for patients' perception that they were back to normal health, the median number of days for the sore throat to settle, and for the mean number of days regular analgesia was required. Reconsultation rates were the same for both groups.

Our practice nurses are allowed, after appropriate training, to initiate prescriptions for antibiotics according to the agreed protocols. In the study, prescription rates for antibiotics were the same in both groups. More patients who consulted with the practice nurse specifically recalled receiving advice about symptomatic treatment than those who saw the GP. Dissatisfaction rates were the same in both groups.

Ninety-four per cent of patients whose sore throats had not settled at five to seven days ($n$ = 84, sample = 89) were followed up at one month.The only serious health sequelae noted was one patient who developed quinsy. This patient was seen by the doctor and prescribed antibiotics at first contact. No hospital admission was required, though she subsequently underwent tonsillectomy.

## Discussion

The aim of this study was to analyse the quality of the service

**Table 1.** Comparison of characteristics in patients seen by the general practitioner or practice nurse.

| Patient characteristic | Consulted doctor (n = 247) | Consulted nurse (n = 188) | Rate difference (95% confidence interval) | Probability (P-value) |
|---|---|---|---|---|
| Sex distribution (female) | 66% | 71% | -0.049 (-0.135 to 0.040) | 0.278 |
| Mean age | 28.3 | 22.5 | | 0.002 |
| History of fever | 68% | 71% | 0.0326 (-11.84 to 5.54) | 0.4647 |
| Absence of cough | 49% | 68% | 0.1897 (-27.89 to -9.65) | <0.0001 |
| Tonsillary exudate | 13% | 6% | 0.067 (1.17 to 12.17) | 0.0191 |
| Cervical lymphadenopathy | 55% | 59% | 0.0385 (-13.15 to 5.57) | 0.422 |
| History of vomiting | 11% | 11% | 0.0017 (-6.14 to 6.11) | 0.9568 |
| Throat swab positive for GA*b*HS | 9% | 21% | 0.1183 (-18.94 to -5.22) | 0.0004 |
| Antibiotics prescribed | 57% | 55% | 0.019 (-0.075 to 0.113) | 0.694 |

GA*b*HS = group A *b*-haemolytic streptococcus.

**Table 2.** Comparison of patients treated entirely by the nurse with those referred to the doctor by the nurse.

| Patient characteristic | Patients treated entirely by nurse (n = 137) | Patients referred to doctor (n = 51) | Rate difference (95% confidence interval) | Probability (P-value) |
|---|---|---|---|---|
| History of fever | 66% | 84% | 0.179 (-29.5 to -3.62) | 0.0159 |
| Absence of cough | 65% | 74% (-22.82 – 5.54) | 0.0955 | 0.2138 |
| Tonsillary exudate | 4% | 10% | 0.0542 (-16.96 to 1.89) | 0.1589 |
| Cervical lymphadenopathy | 55% | 69% | 0.1389 (-28.06 to 2.05) | 0.0858 |
| History of vomiting | 10% | 14% | 0.035 (-16.28 to 5.9) | 0.4974 |
| Throat swab positive for GA*b*HS | 18% | 27% | 0.092 (-23.99 to 3.55) | 0.1665 |
| Antibiotics prescribed | 42% | 88% | 0.459 (-56.63 to -31.96) | <0.0001 |

GA*b*HS = group A *b*-haemolytic streptococcus.

offered by our practice nurses offering emergency five-minute appointments. We used sore throats as the index symptom in view of its frequency as a presenting complaint in primary care.

A protocol for management of sore throats was devised in 1992 based on common agreed practice at that time. However, since this trial, in view of the high rate of antibiotic prescribing, it has subsequently been revised and antibiotic prescribing for sore throats has been reduced significantly. Our consultation rate is 0.06 per capita/per annum, which compares with the national morbidity survey of 0.1.[13] A 90% follow-up of patients at five to seven days provides a valid sample.

Follow-up at five to seven days and 28 days was done by one unblinded researcher, as it would have been technically difficult for the researcher to ascertain from the patient feedback on the doctor or nurse performance without divulging who they actually saw. There is a potential for this to have introduced some bias into the results. However, the research assistant was independent of the doctors and nurses in the study and was impartial to outcome.

The fundamental weakness of this trial is that groups seeing the doctor and nurse were not randomly allocated. This was done for logistic reasons as in a busy general practice it would be very difficult to maintain equal availability of doctor and nurse appointments on every day. However, the two groups have similar characteristics in sex distribution, though the nurses tended to see younger patients.

Analysis of outcome measures shows that patients consulting with the practice nurse tended to have a better outcome. This was specifically illustrated by the median number of days for the sore throat to settle, the number of patients who felt they were back to normal health, and the duration of the requirement to take regular analgesia.

**Table 3.** Follow up data at 5 to 7 and 28 days (n = 392).

| Patient characteristic | Consulted doctor (n = 222) | Consulted nurse (n = 170) | Rate difference (95% confidence interval) | Probability (P-value) |
|---|---|---|---|---|
| Sore throat settled | 74% | 81% | -0.069 (-0.150 to 0.016) | 0.138 |
| Back to normal health | 53% | 64% | -0.114 (-0.21 to -0.015) | 0.023 |
| Median number of days for sore throat to settle. (Includes data from 28 day follow-up.) | 5 | 4 | - | 0.0161 |
| Number of patients requiring analgesia | 78% | 83% | -0.046 (-0.123 to 0.035) | 0.26 |
| Mean number of days regular analgesia required | 2.28 | 1.71 | - | 0.03 |
| Reconsultation rate | 3% | 5% | -0.021 (-0.069 to 0.019) | 0.288 |
| Dissatisfaction rate | 4% | 7% | -0.030 (-0.083 to 0.015) | 0.19 |
| Recollection of advice about home remedies | 54% | 76% | -0.229 (-0.318 to -0.135) | <0.0001 |

As this was not a randomly controlled trial there is a concern that these differences in outcome may reflect the fact that the nurses saw less unwell patients. Analysis of the data does not address this issue completely. Patients who consulted with the doctor were more likely to have a tonsillary exudate while patients consulting with the nurse were more likely to have an absence of cough. Both of these criterion have been associated by Dagnelie[11] with a higher chance of having streptococcal throat infection. However, patients consulting with the nurse grew more group A $\beta$ haemolytic streptococci on their throat swabs. There are recognised limitations in the interpretation of throat swab results as well as the potential for operator variability in the taking of the throat swabs, which restricts the interpretation that can be put on this result. Overall, on the criterion we used to assess the severity of illness, one cannot refute the possibility that the nurses saw less unwell patients, but there is no overwhelming evidence to support that hypothesis. Other possible explanations for the more favourable outcomes for patients consulting the nurse may be that the nurses tended to see slightly younger patients or that their higher level of issuing advice on home remedies may have been therapeutically beneficial and reflect a more patient-centred approach.

Twenty-seven per cent of patients initially seen by the nurses were referred on to the doctor for assessment. This compares with 12%[4] and 22%[5] quoted in other trials. However, these related to nurse practitioners with longer appointment times.

Our results suggest that there is a tendency for nurses to refer the sicker patients to the doctor, but the only key characteristic, that was assessed in this study, for which the referred subgroup was statistically different from the group treated by the nurse, was a history of fever. However, the group referred to the doctor by the nurse had a significantly higher chance of being prescribed antibiotics. Different interpretations can be put on these results. It could be that the nurses were adept at identifying sicker patients, even though all the results of the criteria measured in this study are not statistically significant, and that this group therefore warranted a higher prescription rate of antibiotics. It is also possible that some of the patients referred to the doctor were at the patients' request.

It is possible that the nurses tended to conform better to the agreed protocol and that assertive patients insisted on a doctor review if antibiotics were not forthcoming. It may then be the case that doctors initiated scripts because of patient pressure, or that doctor review of the case revealed it to be clinically appropriate. It is also possible that doctors interpreted the fact that the patient had been referred to them by the nurse as implying that a fellow professional had assessed the patient as being more unwell and therefore more likely to need antibiotics. Further work on patient expectations and doctor and nurse interaction would be needed to clarify this area.

At follow-up, more patients felt that their sore throat had settled than felt they were back to normal health. This appears to be due to ongoing viral type symptoms, such as malaise, cough, and tiredness, which patients mentioned at follow-up.

Reconsultation rates were low for both doctor and nurse at 3% to 5%. Other studies looking at reconsultation rates of patients with minor illnesses have reported rates of 7% to 29%.[6] Patient expressions of dissatisfaction with the service were low at 4% to 7% and compare with Fall's reported satisfaction rate of 91%.[9]

The high rate of antibiotic prescribing in this study has been subsequently addressed, but compares favourably with other studies that quote antibiotic prescribing rates of 80%.[14]

It therefore appears that practice nurses can offer medical management for sore throats of at least equal effectiveness to GPs. In some areas (e.g. advice about home remedies) it may be superior.

## Conclusion

Practice nurses can establish a safe and effective service for the treatment of sore throats in primary care, in a time-restricted emergency appointment setting. This is a cost-effective use of health resources as evidence suggests that increasing nurses' availability to manage minor illness does not increase overall consultation rates, but allows doctors more time to assess more difficult cases.[15]

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